HOWASAFE

Installation manual
WP WASTO

HOWASAFE

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1 PRIOR TO INSTALLATION

1.1 High water: Danger for buildings

Before a building is fitted with a flood protection system, it is important to establish whether the building is in fact structurally suitable for such an installation. With this in mind, a few words on hydrostatics: When in water (standing, not flowing), a building is essentially subjected to two effects – **upward buoyancy** $F_{WD,v}$ and **horizontal water pressure** $F_{WD,h}$ on the walls (see illustration 1.1). Upward buoyancy only has an effect if there is also a build up of water pressure below the floor slab, i.e. if the building is standing completely in groundwater (this depends from case to case on the factors such as the type of ground and the groundwater level before the flood). Both buoyancy and horizontal water pressure exert major forces on the building, which should not be underestimated. The effects of such forces can cause greater damage than the pure soaking of walls and ceilings. The forces described above occur only if the building is protected from flooding by a flood protection system and can therefore not fill up with water.

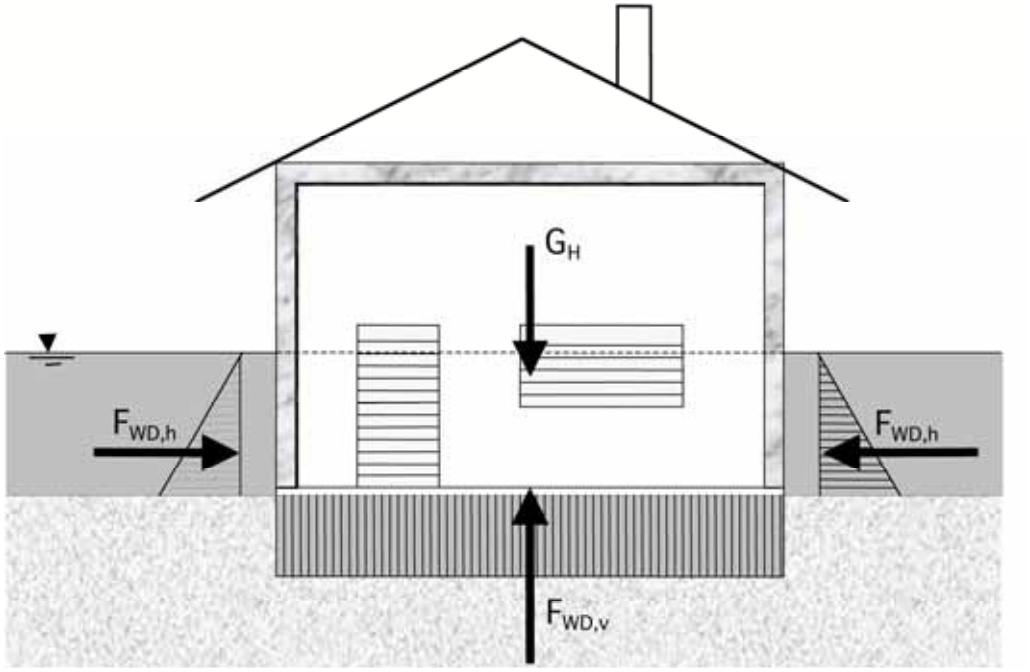


Illustration 1.1: The effect of forces on a building during a flood

Horizontal water pressure works out as:

$$F_{WD,h} = \frac{1}{2} \cdot h^2 \cdot \rho \cdot g \cdot L \quad (kN)$$

h = Water height (m)

ρ = Water density 1.0 t/m^3

g = Gravitational acceleration 9.81 m/s^2

L = Length of the wall on which the water pressure is exerted

Here's an example of this:

Let's assume a building is standing h = 1.5m deep in the flood water of a river. The side of the building on which the water pressure is being exerted is L = 10m long. The horizontal force being exerted on the wall works out as follows:

$$F_{WD,h} = 0{,}5 \cdot (1{,}5\ \text{m})^2 \cdot 1{,}0\ \text{t/m}^2 \cdot 9{,}81\ \text{m/s}^2 \cdot 10\ \text{m} = 111\ \text{kN}$$

111kN (Kilo-Newtons) equate to the gravitational force resulting from a mass of around 11,300kg (or, looked at metaphorically, 'the weight of 12 small cars is being pressed against the 10m-long wall').

Can the wall withstand the pressure? It becomes clear from this example that the effects of the forces caused by water pressure that a building is subjected to in a flood can (in the worst case scenario) lead to total destruction, very possibly with risk to life and limb, and to a need for subsequent demolition.

It's a similar picture as regards the force of upwards buoyancy $F_{WD,V}$. This is based on Archimedes' principle: "The buoyant force on a submerged object is equal to the weight of the fluid that is displaced by the object".

If the building's own gravitational weight G_H is greater than or equal to the weight of the displaced water $F_{WD,v}$, buoyancy begins (according to Archimedes' principle) to lift the building, with very serious consequences for the entire construction. To stop a building lifting, ballast, such as sand bags or paving slabs, should be put in the basement. If dry ballast cannot be put in the basement, then, in an emergency, buildings at risk from the effects of buoyancy should be flooded, as the water damage in the basement will be less than the total damage if the whole building starts to lift.

The question as to whether in the event of a flood a specific building is in danger due to lifting or horizontal water pressure, and when the building should be flooded, is something that only a structural engineer can answer!

The manufacturers (Husemann & Hücking GmbH), retailers and fitters of WP WASTO accept no liability whatsoever for any damage or losses resulting from the effects of the hydrostatic forces described above.

WP WASTO has been designed as a fixture to prevent or – if that is not possible – to significantly reduce damage. However, as each situation in which the system is used is generally some form of natural catastrophe, neither the manufacturer, retailers nor fitters can give an absolute guarantee that all damage will be avoided. Similarly, the manufacturer cannot be made liable for any installation errors.

1.2 WP WASTO installation options

The WP WASTO system has been tested for openings up to 3,000mm wide and max. water levels also of 2,000mm. The different possible configurations are shown in the diagrams on pages 8 and 9. First of all, you should decide whether the flood protection system ought to be installed **in front of** or **within** the opening that is due to be protected (for a list of parts, see appendix A).

If possible, you should install the WP WASTO system **in front of** the opening (see illustration 1.2). Installation **within** the wall opening is also possible, however this places higher demands on how well it is fixed in place (bolts, wall plugs, masonry).

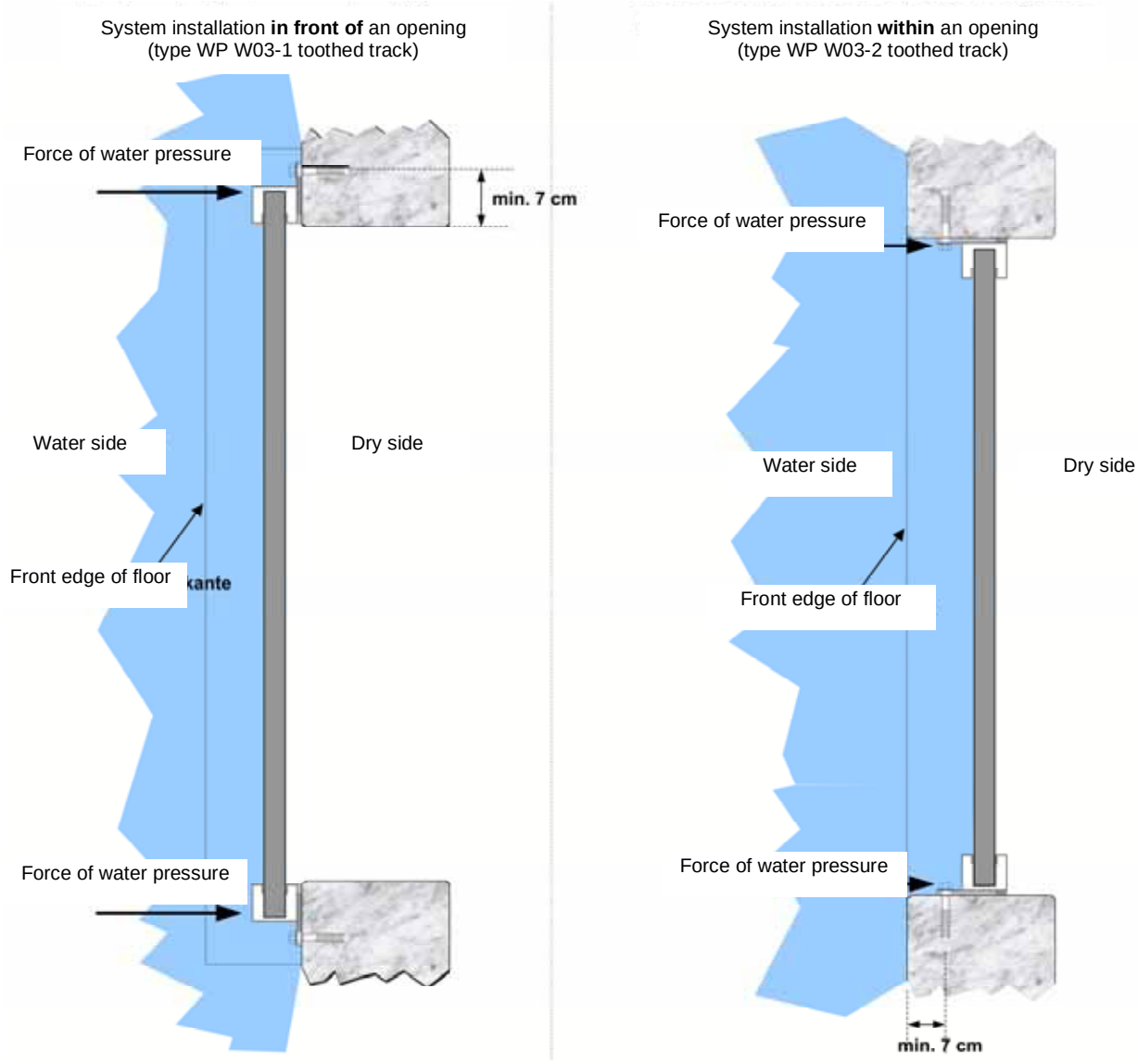


Illustration 1.2: WP WASTO installation options (floor plan view)

Installation **in front of** the opening in the wall has the advantage that the bolts fixing the toothed tracks in place do not come under any stress from the pressure of the water. Force is exerted in the direction of the bolts' lengthways axis, which pushes the toothed tracks even more against the wall (and the seal). Basic plastic rawlplugs

(e.g. from ‘Upat’ or ‘Fisher’) combined with hexagonal head bolts are all that is needed for fixing the toothed track in this kind of installation. For a recurring assembly/disassembly of the ratched track is recommended screw sleeves are bonded into a wall.

The type of installation described above is, however, only possible if the front edge of the floor protrudes at least d = 5cm (the width of a toothed track) above the tracks’ installation level, otherwise they would have no surface contact. For installing the system **in front of** the opening, we provide the WP W03-01 external toothed track (see illustration 1.2 a).

If the front edge of the floor ends flush with the walls, the system can only be installed within the wall opening. For this style of installation, WP W03-02 toothed tracks are fitted in the opening, as shown in the right-hand section of illustration 1.2. With the system fitted this way, the force from the pressure of the water is exerted at right angles to the bolts’ lengthways axis. In addition to longitudinal force from the initial tension of the seal, as the water level rises the bolts are consequently subjected to stresses that try to make them shear off. For such fittings, you should therefore use fixing elements (e.g. heavy-duty raw plugs or anchors) appropriate to the base they are being fixed to (e.g. concrete, wall tiling, natural stone etc.). If you are in any doubt about what fixing elements to use, it is advisable to give us a call.

Warning: Wherever the system is installed as a flood protection system within a wall opening, it is essential that the bolts are fitted on the water side! If the bolts were fitted on the dry side, there would be a risk with support widths b > 1m and backed up water levels h > 1m that the water pressure could cause the toothed tracks to distort slightly and that water could get through under the glued seals.

If the system is being used exclusively for protection from break-ins, then it makes sense to screw up the toothed tracks on the inside of the wall opening (it is then impossible to get at the bolts when the shutter is closed!).

For both types of installation (<u>in front of</u> and <u>within</u> an opening) it is important to ensure that the distance of the bolts from the edge is at least b = 7cm (see illustration 1.2).

1.3 Base structure requirements

The condition of the base structure (wall and floor surfaces) is very important in achieving a good seal. The straighter and flatter the surfaces are on which the WP WASTO is fitted, then generally the easier the installation and the smaller any subsequent leak of water. We describe below what is required to achieve a good surface quality.

The seal between the bottom slat of the WP WASTO system and the floor (and between the toothed tracks and the wall) should be approximately d = 12mm thick. Small areas of unevenness (up to c. 4mm) in the floor or wall are evened out by a prestressing process within the sealant, however the form of the unevenness greatly reduces this sealing quality (see illustration 1.3).

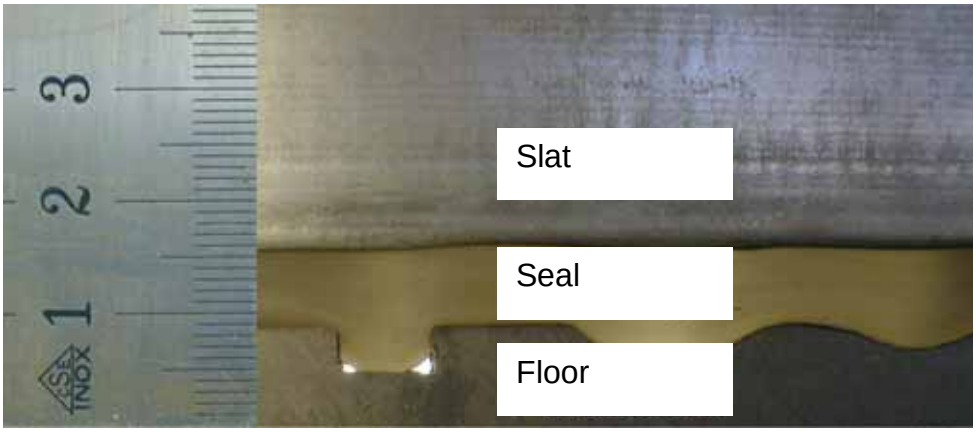


Illustration 1.3: WP WASTO bottom seal on an uneven base (cross section view)

It is clear from illustration 1.3 that small areas of unevenness up to a depth of approx. h = 4mm can be easily compensated for by the seal. However, sharp edged lumps and gaps (e.g. floor-tile joints, unevenness in external rendering or 'concrete noses' on formwork supports) are not sealed off, even if heavy pressure is applied to the seal. To avoid more significant gaps in the seal, such sharp edged areas of unevenness should be levelled out with an appropriate filler (e.g. silicon, fluid filler, various coatings etc.) before the WP WASTO system is fitted. If you intend the toothed tracks to remain permanently in place, it may also make sense to first apply a waterproof cement plaster (e.g. Schäfer 620) to the area where they are to be fitted. The maximum deviation of the base surface from the ideal, straight line must not exceed Δh=+-2mm. This requirement can be checked by laying a straight edge on the surface, such as a WP WASTO slat or a screeding batten. Ideally the seal should lie perfectly flat even without any pressure being applied.

1.4 Working out the fitting measurements required

1.4.1 Toothed track lengths

The level of water expected at the point where the system is being installed is the decisive factor in determining the length of the guides (toothed tracks). For an installation **in front of** the wall opening, you should use tracks 15cm higher than considered necessary (this includes 10cm extra safeguard against lapping waves and 5cm extra for the clamps). When cutting the ratched tracks, make sure that the lower slot is about 70 mm from the floor. This ensures that a sufficient pressure is exerted on the seal. The maximum possible height that can be protected by the WASTO system (without the extra safeguard) is 2m, for which the required toothed track length is therefore a maximum L = 2.05m.

For an installation within a wall opening the tracks have to be around 1cm shorter than the opening's internal height. When fitting the system this way, it is essential that you make sure you push the clamps into the toothed tracks **before** fixing these to the wall! As the clamps require about 5cm of free toothed track length, the maximum water protection height for an installation within a wall opening is at least 5cm below the opening's upper edge.

1.4.2 Slat lengths

The length of the slats should be 3 to 6.5cm longer than the measured internal distance between the left and right toothed track (illustration 1.4).

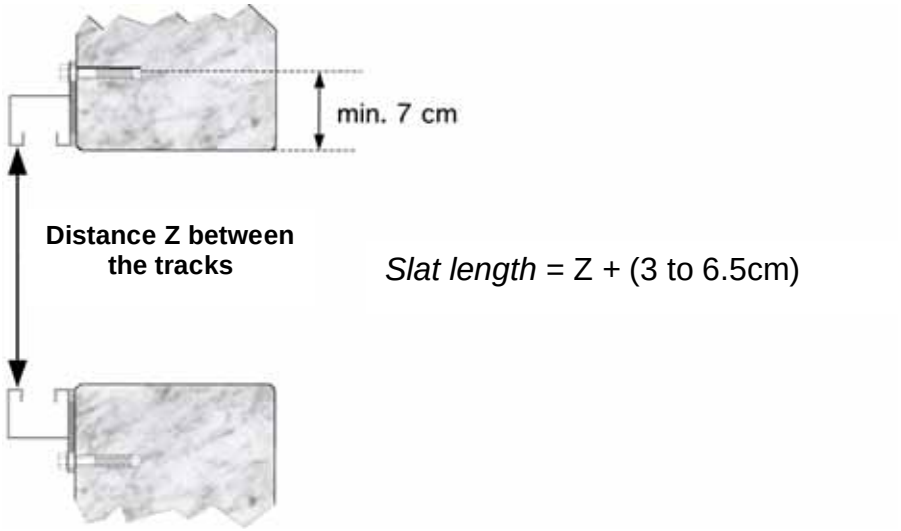


Illustration 1.4: Determining slat length

Important note: When fitting toothed tracks within a wall opening, the top four slats may not be more than 3cm longer than the distance Z between the tracks, otherwise these slats cannot be inserted.

When the system is installed within a wall opening, significant forces build up on the joints (i.e. on the bolts and raw plugs) when water is backed up against it. The need to keep such forces in check makes the range of applications for this type of installation limited by high levels of water pressure, unless extra supports are fitted (e.g. in the middle of the opening). Diagram 1 shows the possible opening widths (=support widths) for each of various allowable levels of backed up water.

Installation within a wall opening

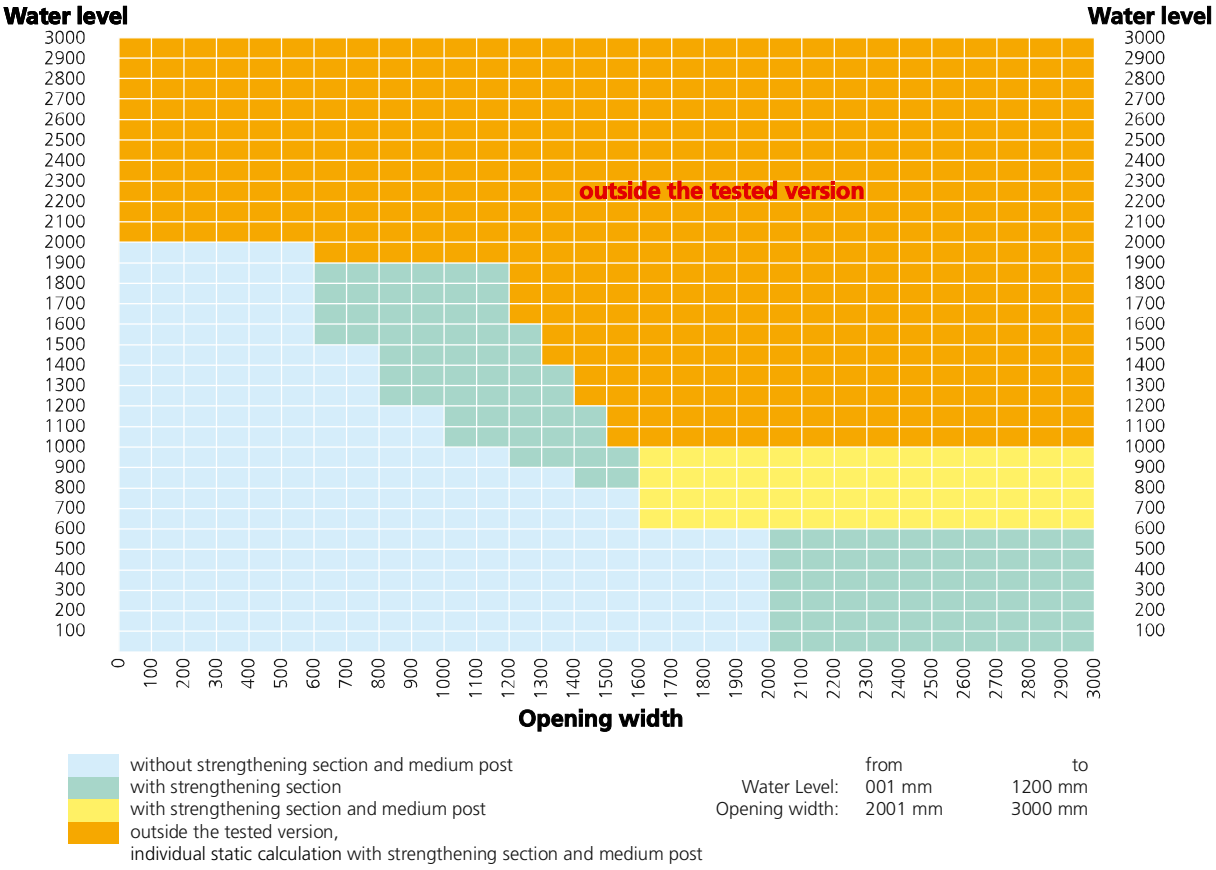
Diagram 1: Allowable levels of backed up water and support widths for the WP WASTO when installed within a wall opening (diagram 2 is the definitive guide for installations **in front of** the wall opening).

1.4.3 Slats with strengthening sections

WP WASTO (WP W03-03) slat sections are of a very lightweight construction so that they are easy to work with when fitting or removing. For most applications, the (WP W03-03) slats can be fitted without the extra (WP W03-04) strengthening section (see illustration 1.5).

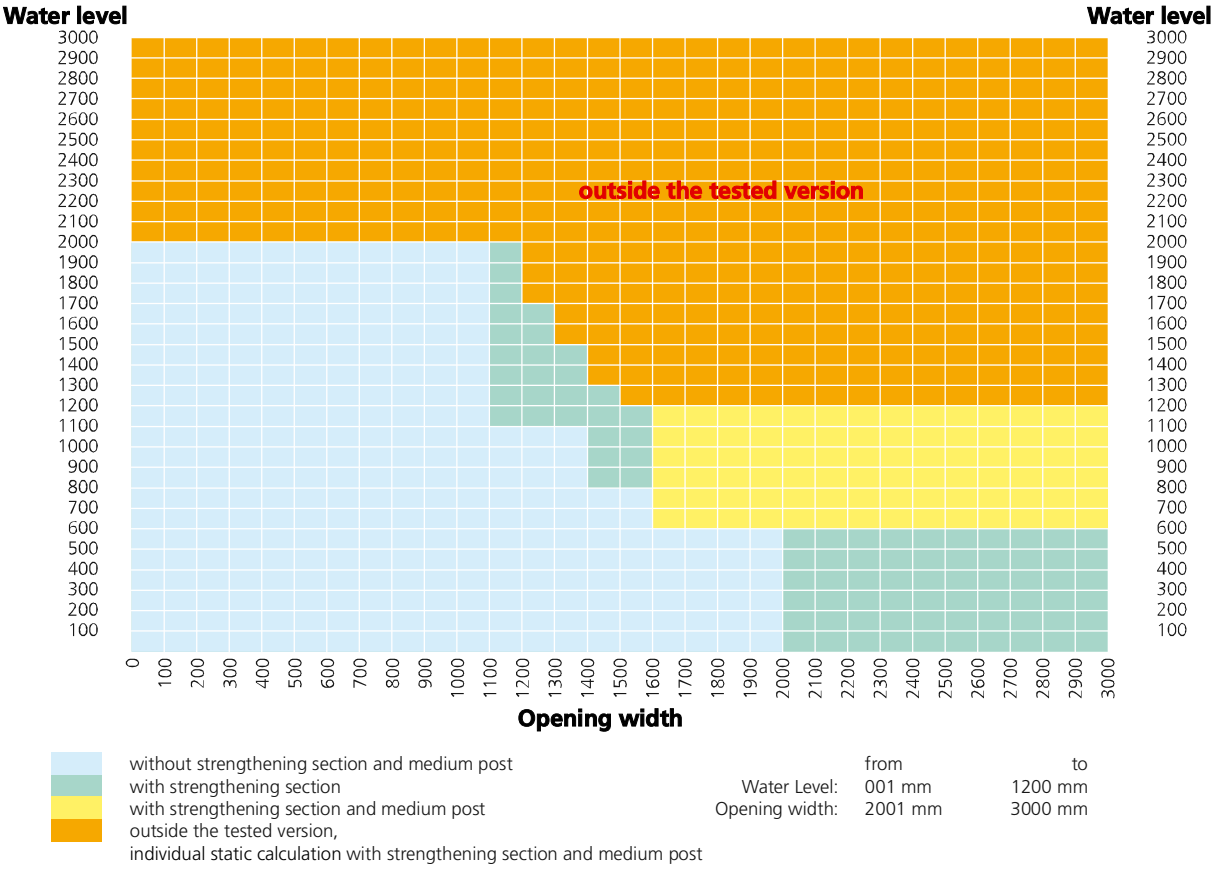
The only time slat strengthening sections should perhaps be fitted to limit bending is if support widths are wider than b = 1.2m or the height of backed up water is expected to be higher than 1.5m. You can see from diagram 1 above the respective support widths and water depths above which strengthening sections should be fitted. The figures are applicable both for installation within and in front of the opening. The strengthening sections are available in combined lengths of 4,500mm. The calculations in our example are based on 900mm and 1,400mm.

Chart 1: Permissible surge heights and spans for WP WASTO in the assembly within the wall opening.



Installation in front of a wall opening

Chart 2: Permissible surge heights and spans for WP WASTO in the assembly before the wall opening.



If you intend to fit strengthening sections these can either be screwed on, using self-tapping bolts, or welded on. If you use type 8.8 self-tapping bolts, then it is adequate to screw the sections on using every fourth top and bottom hole (we recommend using a high torque electric screwdriver to screw in the self-tapping bolts, and, of course, heeding the bolt manufacturer's advice!). The distance of the strengthening section from the edge of the slat should always be the same so that the strengthening section's elongated holes are available if needed for further fixing options (e.g. inserting a threaded rod).

Note: The limit on bending of (Z/150) in this example was chosen in order to err on the side of safety. The retaining system will not give way before the degree of bend reaches f_{max} > (Z/30)mm.

Illustration 1.5: 2,000mm slats with and without a 900mm-long strengthening section

1.4.4 Application medium post for larger spans

For building openings with widths of 2000 mm we recommend the use of WP WASTO system with the central post (WP W09-06). Tested was extended to the center post system with a wingspan of 3000 mm and a water level of 1200 mm. For larger dimensions, the calculation of an individual statics is absolutely necessary.

The center post is mounted flush on the inside of the system. With a telescopic ratchet mechanism for depressing the slats in the vertical one additional strain is reached in the system center. In addition, the catch fixed to the ground pole horizontal compressive forces and deflections for large spans, better off.

The included ground socket must first be anchored in the ground permanently and firmly. The 1750 mm long center pole is the use of the system by 250 mm recessed in the sleeve and secured by a locking pin.

The graphs 1 and 2, the audited widths and congestion levels for the use of WP WASTO with or without amplification profiles (WP W03-04) and are taken with-telpfosten (WP W09-06). Design representations are in the following chapter 4.2 can be found on page 22.

2. System installation

2.1 Fixing the toothed tracks and track seals

After carefully preparing the base surface (see point 1.2), you can fix the toothed tracks to the wall. Before sticking the seal to the tracks, you should use these without the (WP W04-17Z) seal stuck on as drill hole templates for the raw plug holes, making the drill holes wherever possible in the lower part of the tracks' elongated holes. In this way, you ensure that when the installation is complete the sealed surface between the end of the toothed tracks and the floor will have adequate tension ('contact pressure').

It is important to ensure that the toothed tracks are fitted as parallel as possible to each other. We therefore strongly recommend that you use a spirit level (see illustration 2.1).

Illustration 0.1: Using the toothed track as a drill hole template (spirit level ensures that both tracks are fitted adequately parallel to each other)

To make it easier to knock in the raw plugs and to create a stronger connection, you should use a vacuum cleaner to clean the drilling dust out of the drill holes.

Once you have drilled the holes, the ratched tracks can be sealed with material mounted either WP-W04-17 Z or silicone.

2.2 Permanent attachment

In case of permanent attachment of the ratched tracks to the building, we suggest an alternative to the tooth rail seal (WP W04-17 Z), note the use of silicone compound, (which is strictly claim on outdoor and underground-treatment). The silicone is applied in this case a large area between wall, floor area and dental splint. After fitting the ratched tracks, one should first set up two plates, and clamped with the clamping pieces. Now the edge and base area of the ratched tracks carefully sealed with silicone. The tension of the system should be solved only after cure of the silicone mass.

2.3 Assembly of the seal trays with WP W04-17 Z

Note: The seals should only be stuck on at temperatures of around +10°C! At colder temperatures it can take one or two hours until the adhesive develops full adhesion and sticks fast to the slats or tracks. You should also never stick the seal to any surface that has become damp! If necessary, therefore let the slats and toothed tracks stand for an hour or two after being brought to the site, before you begin to fix on the seals.

1. Using a cloth and solvent (white spirit or acetone), clear all dirt and grease from the tracks' surfaces to which the seal is going to be stuck.
2. The track seal closes both the gap the between the track and the wall and the joint between the end of the track and the floor. At the bottom of the track, the seal therefore has to overlap by about 5 to 6cm (see illustration 2.2). Without applying any undue pressure, stick the seal on, centred and in as straight a line as possible.
3. Cut the seal off flush at the top end of the track (e.g. with a sharp carpet knife). Bore through the seal, if necessary with a punch, where the bolts are going to go (the diameter of the drill should equal that of the bolts).

Illustration 0.2: Sticking the (WP W04-17Z) seal onto the track

4. Offer up the track, making sure that the front of the track at the bottom is pressing on the overlapping part of the seal – as in illustration 2.3a. Then, us-

ing a socket spanner (or cranked ring spanner) screw the bolts in (see illustration 2.3b). When you have finished fitting it, the track should appear as in 2.3c.

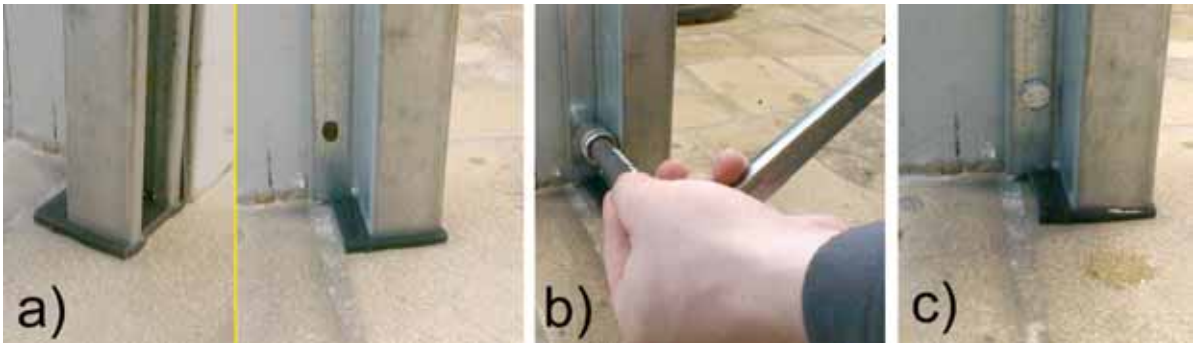


Illustration 0.3: **Fixing the toothed tracks**

2.4 Adding seals to the slats

Before the first blade is inserted, it must first be used to Fußdichtungsschiene (WP W08-06). When sawing, the seal at the desired sawing point by putting a knife to cut generous. The sawing process is facilitated by this.
The Fußdichtungsschiene can either be used individually or as in Figure 2.4 visible, firmly attached to the bottom slat. The shape of the Fußdichtungsschiene fits into the groove of the lamella.
Fixing proposal:
1st The protruding guide rail is cut at both ends so the two metal flags as shown in Figure 2.4 b remain.
2nd The sheet metal beaded flags are each at the ends that they bear the associated upper flap (lamellar seal) received a solid conjunction, as shown in Figure 2.4 c.

Proposal Fixing:

1. The protruding guide rail is cut at both ends so the two metal flags as shown in Figure 2.4 b remain.
2. The sheet metal beaded flags are each at the ends that they bear the associated upper flap (lamellar seal) received a solid conjunction, as shown in Figure 2.4 c.

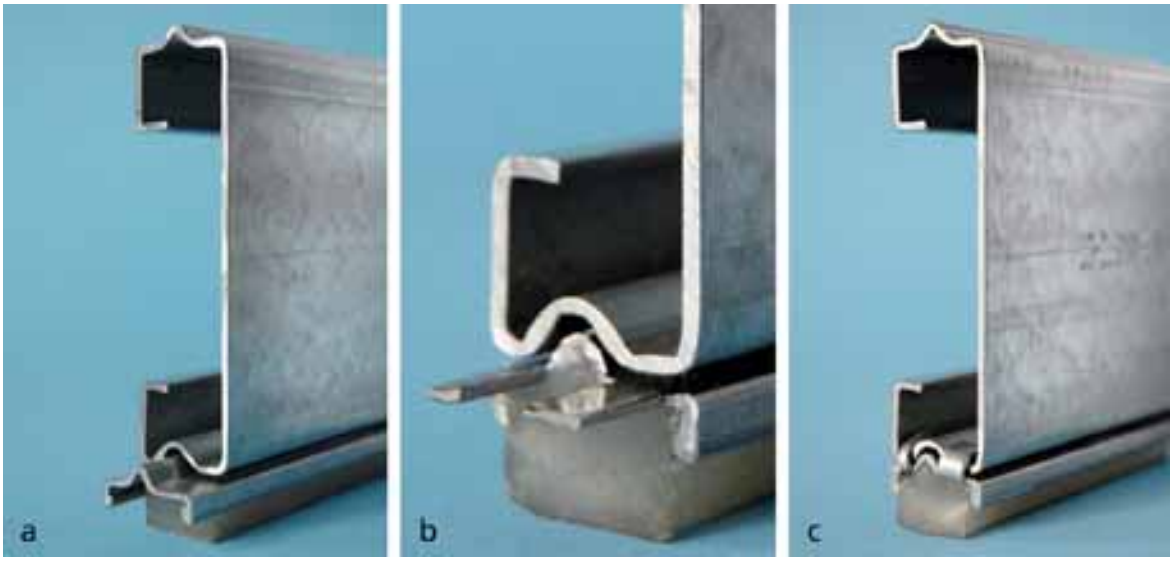


Figure 2.4 a - 2.4 c: Fixing the Fußdichtungsschiene with the lamella

Attaching the Fußdichtungsschiene at the lower lamina facilitates the use of multiple handling, and should possibly be provided with a first be marked to indicate the order.

Then paste all the other plates with the plate seal (WP W03-10Z) on the bottom outside (see picture left).

Figure 2.4 d: the attachment plate gasket

2.5 Inserting the slats into the toothed tracks

Once you have stuck seals onto all of the slats, you then slot the slats into the channels of the toothed tracks. The ‘smooth side’ of the slat goes on the water side (see illustration 2.5). After slotting in each slat, adjust its sideways play between the tracks so that this is even.

Illustration 0.4: Inserting slats the right way round

Insert clamps (WP W03-11Z) into the tracks on both sides above the top slat (see illustration 2.6). The vertical bolt should be on the water side of the flood protection system (see dotted line in illustration 2.6). The bottom of the clamp should rest on top of the top slat. Using the Allen key, then tighten the horizontal clamping bolts so that they are ‘hand tight’ on both sides (illustration 2.6, left). The clamps are now locked in the toothed tracks (the teeth completely interlock with each other).

llustration 0.5: Inserting the clamps and applying initial pressure to the slat seals

Now alternately screw down the Allen bolts on each side, one revolution at a time, until you can feel clear resistance through the Allen key (see illustration 2.6, right). 'Hand tight' is enough – do not use force! Depending on the height of the 'stack' of slats, this will be compressed by between 5 to 25mm as the tension bolts are tightened. When this is done, the individual slats will have been firmly pressed together and initial pressure applied to the bottom seal.

If the tray has been used with silicone, is now the edge ... (See note on p. 13)

2.6 Sealing off the vertical slat joints

Finally, the vertical joints between the slats and the side tracks have to be sealed off. There are two possible ways of doing this. You can either do the job with Teroson sealing tape (WP W04-19Z) or – if this is not available – with standard builders' silicon (WP W03-14Z), squeezed from a cartridge.

Note: In contrast to sealing tape, silicon must not be subjected to water pressure – depending on the temperature – for up to one or two hours after application. Otherwise there is a risk that the still soft silicon will be pushed through the joints by the pressure of the water and that the seal will fail.

Illustration 0.6: Option 1, sealing sealing tape

shows the joint sealed off using sealing tape. The surface must be clean and dry. A coin (e.g. a 2 euro piece) can be used as a 'tool' or aid to push the seal into the joints, as shown. The protective film should not be removed in the process, as otherwise the joint compound becomes stuck to the 'tool'.

Illustration 0.7: Option 2, sealing WP W03-14Z silicon.

shows the joint sealed off with silicon. Start sealing from the bottom, pressing the nozzle of the sealant cartridge firmly against the gap. Subsequently remove excess silicon with a putty knife or grouting tool.

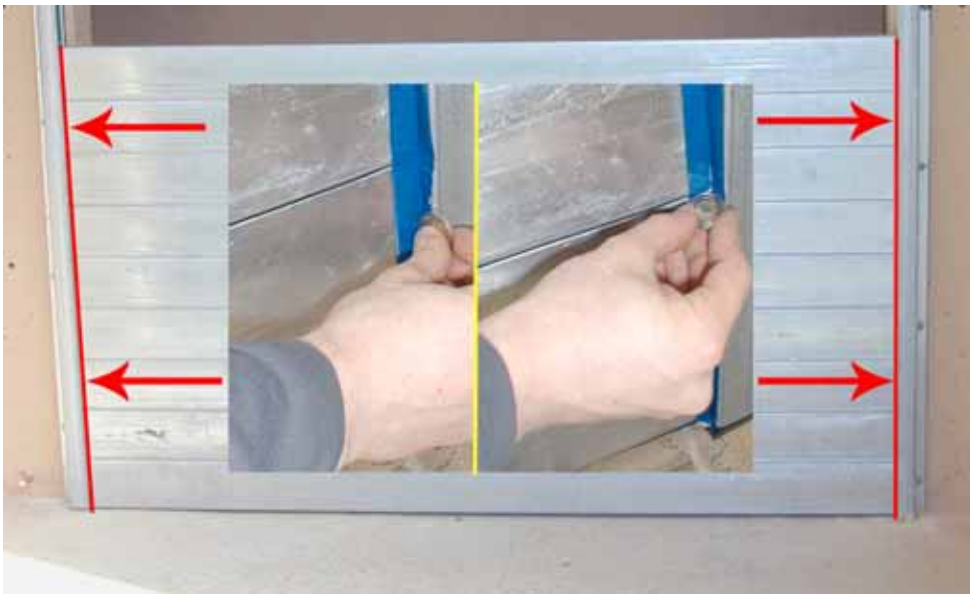


Illustration 0.6: Option 1, sealing vertical joints (red lines marked by the arrows) using WP W04-20Z sealing tape

Illustration 0.7: Option 2, sealing vertical joints (red lines marked by the arrows) using WP W03-14Z silicon.

2.7 Storing the slats

Following a flood, we recommend using a high-pressure cleaner for cleaning the slats (if you do not have access to such a cleaner, a sponge and luke warm soapy water will also do). Do not use any 'sharp' (i.e. caustic or acidic) cleaning additives, as

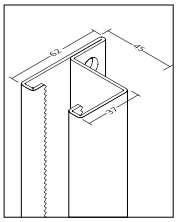
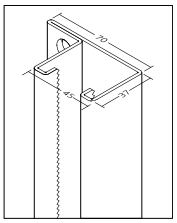
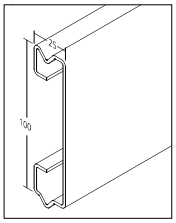
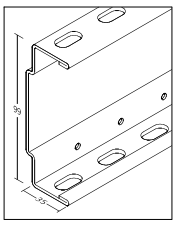
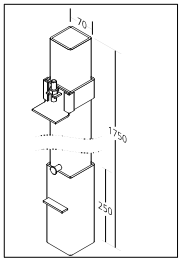
these will damage both the seals and the chrome plating! Leftover bits of sealant can be removed with a sharp knife or scraper (if necessary, loosen first with white spirit or acetone).

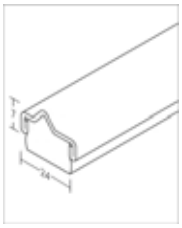
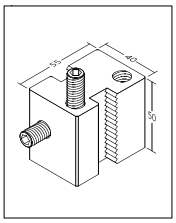
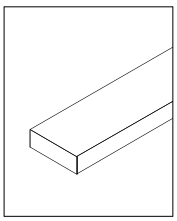
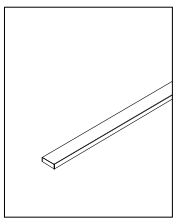
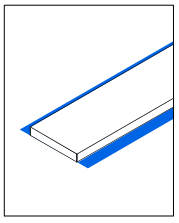
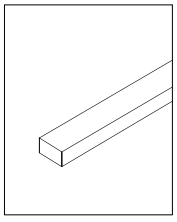
Note: The slats should be stored somewhere dry but not too hot (long periods of storage at temperatures of over 40°C will ultimately make the slat seals brittle). You should ensure that when stored the slat seals can fully expand (it is imperative that you avoid the seals being 'squashed' by the slats being stored resting on the seal surfaces!). The slats can be nested together to save space and can be bundled into easily manageable packs using the straps (WP W03-16Z) supplied (see illustration 2.9).

Illustration 0.8: Space-saving storage by nesting the slats together

2 Product overview

The WP WASTO flood protection system consists of the following individual parts:

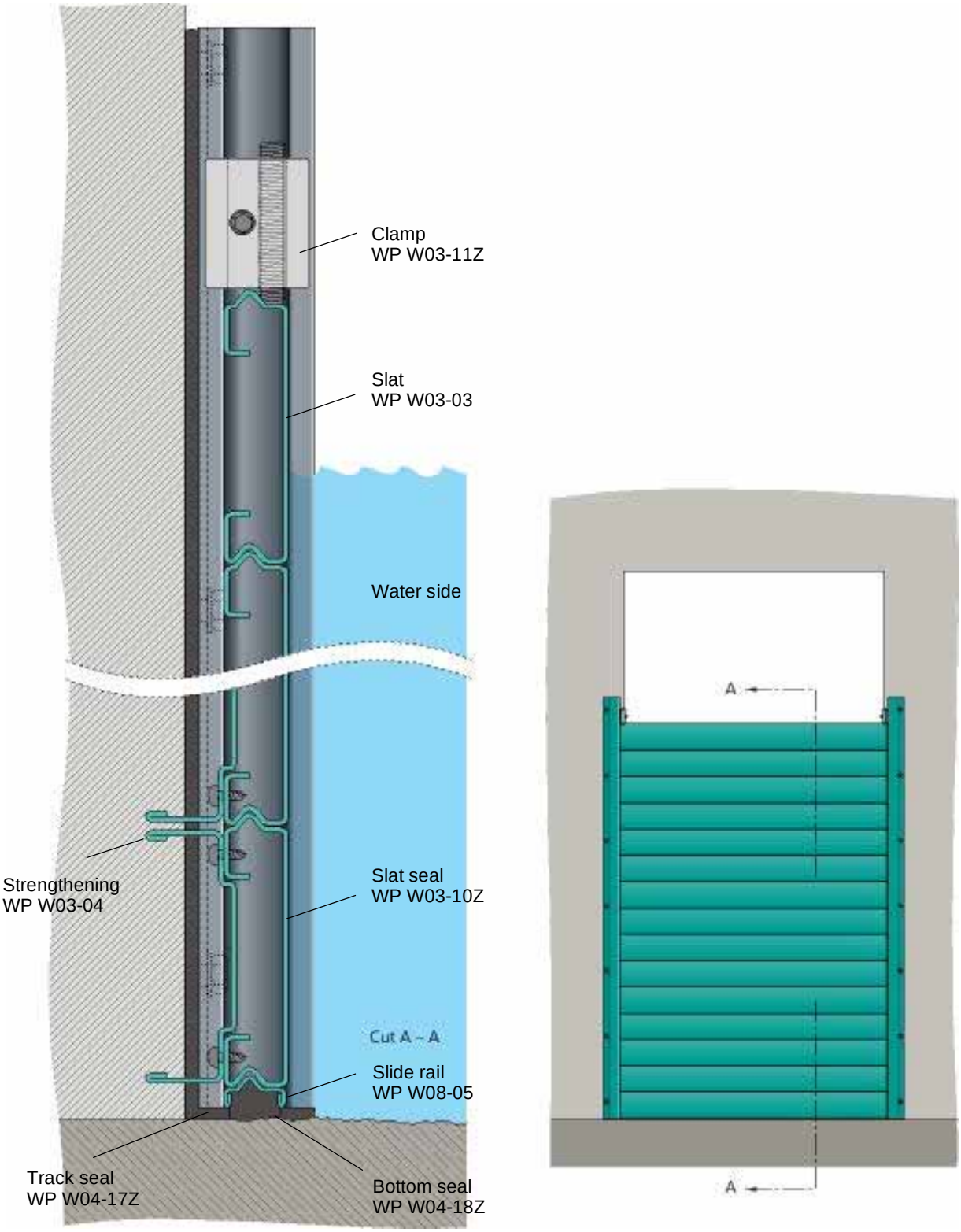
Illustration	Name	Item number	Length / Pack
	Toothed track, outside	WP W03-01	4,500mm
	Toothed track, inside	WP W03-02	4,500mm
	Slat	WP W03-03	4,500mm
	Strengthening section	WP W03-04	4,500 mm
	Medium post with bottom hull	WP W09-06	1,750 mm

	Slide rail	WP W08-05	4,500 mm
	Clamp (+ bolts and Allen key)	WP W03-11Z	2 per pack
	Toothed track seal	WP W04-17Z	25m / roll
	Slat seal	WP W03-10Z	200m / roll
	Closing seal (Teroson)	WP W04-20Z	40m / roll
	Cartridge sealant	WP W04-18Z	1 off

4. Construction Images

4.1 Audited widths to 2,000 mm and 2,000 mm application range water level

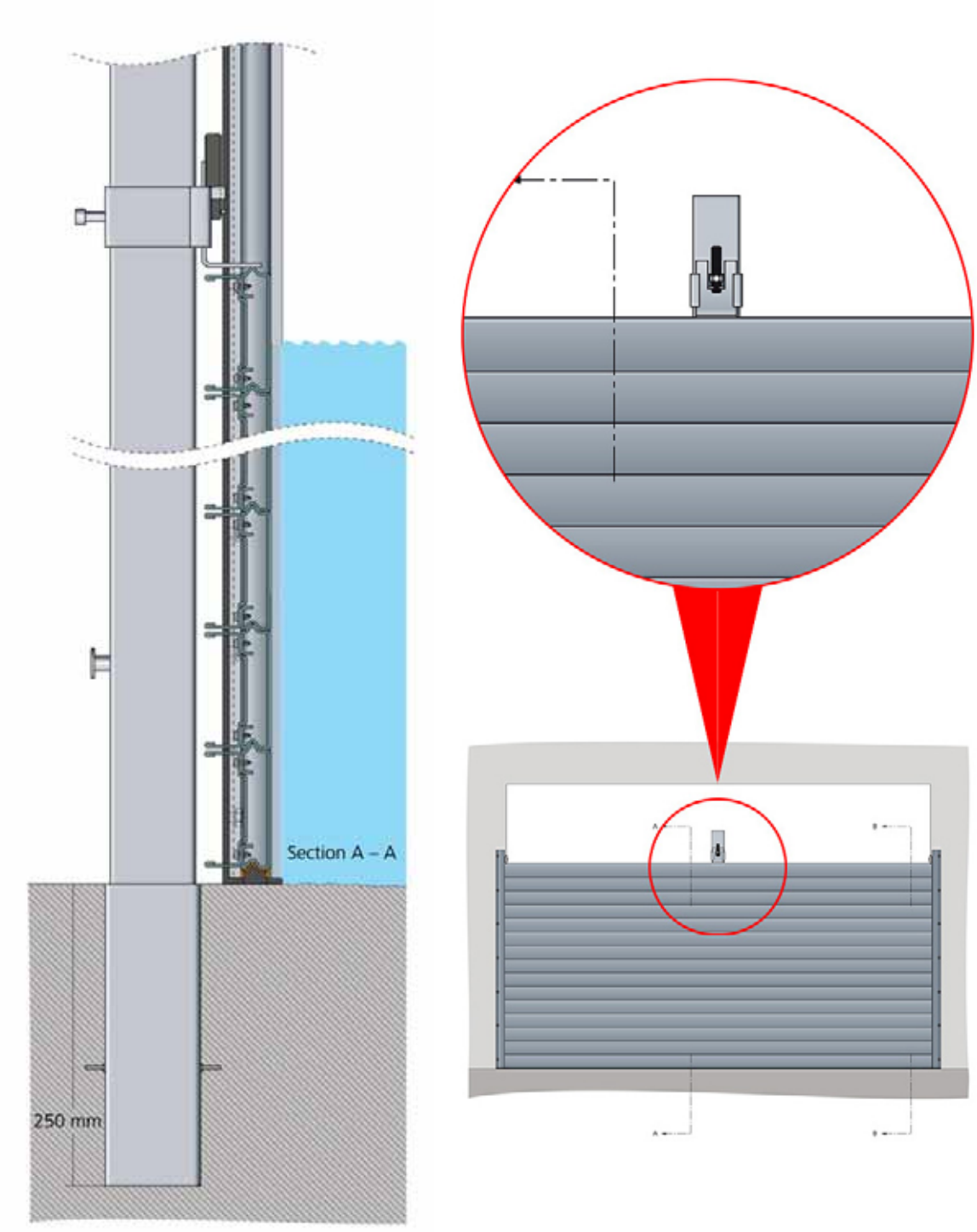
(Charts on pages 9 and 10)



Side view **Front view**

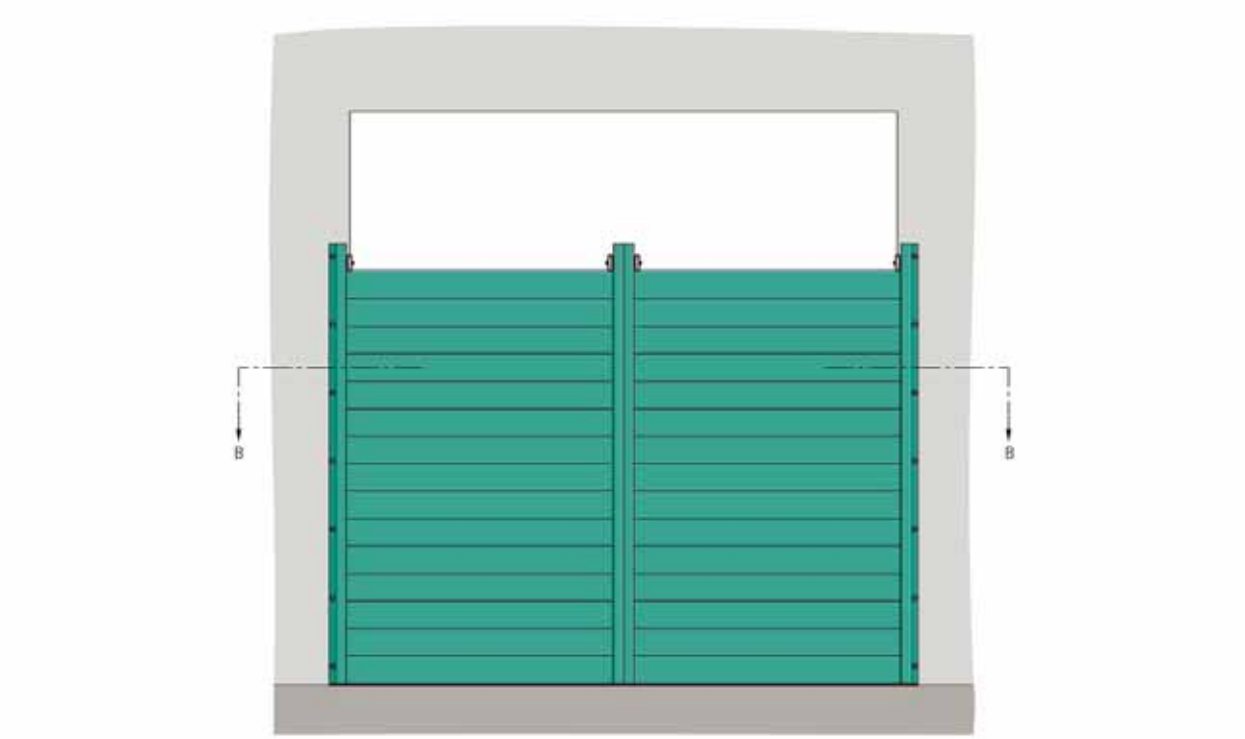
4.2 Audited widths to 3,000 mm and 1,200 mm application range water level

(Charts on pages 9 and 10)

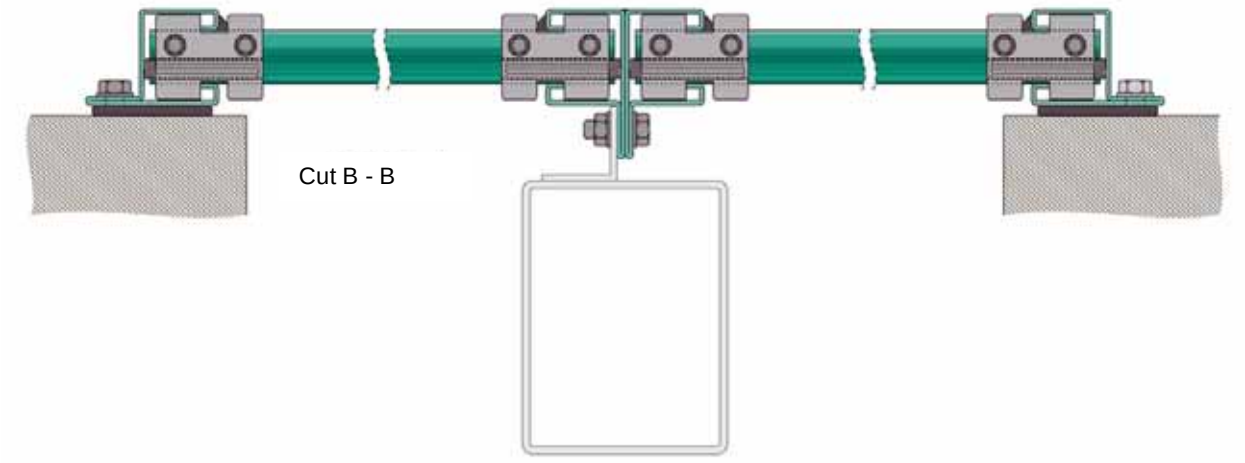


The tested ranges of WP WASTO applications			
Width of application		Height of barrier	Equipment
up to 2.000 mm	x	up to 600 mm	without medium post, without strengthening section
up to 2.000 mm	x	up to 2.000 mm	without medium post, with strengthening section
up to 3.000 mm	x	up to 600 mm	without medium post, with strengthening section
up to 3.000 mm	x	up to 1.200 mm	with medium post, with strengthening section

5. Possible untested solutions for installing the system



Front view



Top-down view

Illustration of an untested system configuration using a central support,

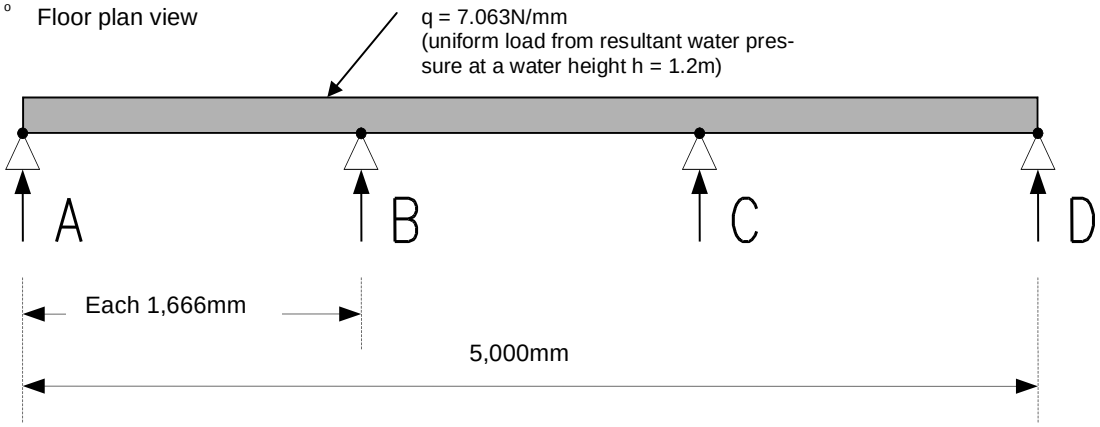
for spanning large widths (individual static calculations absolutely imperative!).

Example calculation

Actual height of flood water h = 1m (height for calculations h* = 1.2m, i.e. 'on the safe side'). The resultant stress from water pressure q (per metre of protective wall) works out as:

$$q = \frac{1}{2} \cdot \rho \cdot g \cdot h \cdot h = \frac{1}{2} \cdot 1000 \cdot 9{,}81 \cdot 1{,}2 \cdot 1{,}2 = 7{,}063 \text{kN/m}$$

The following static system can thus be established (as, due to the nature of its construction, the WASTO system cannot relay any peripheral clamping torque, four joints are arranged within the static system):

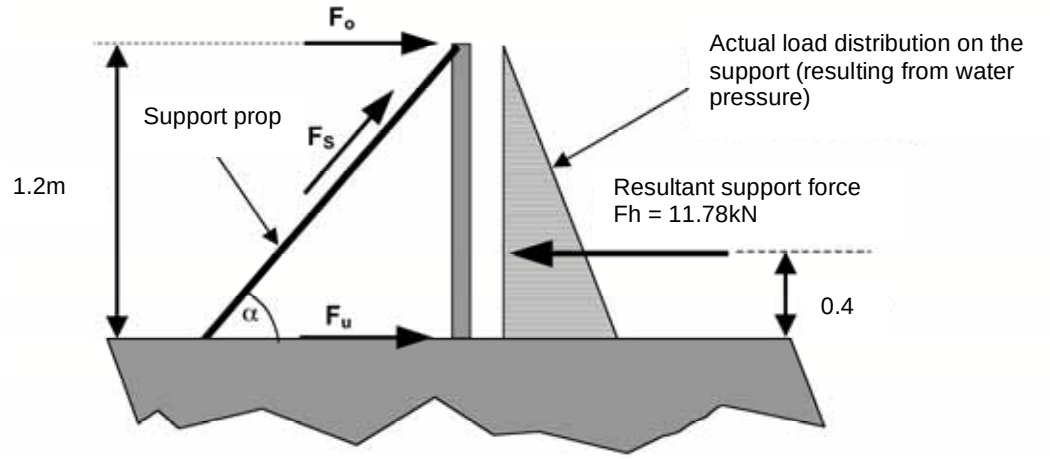


Bearing forces A, B, C and D are calculated from adding partial bearing forces (from system A-B, B-C and C-D) as:

A = 5.89kN; B= 11.78kN; C=11.78kN; D = 5.89kN

(A +D = wall connections, B+C = supports)

Each support must therefore transfer a horizontal force of Fh = 11.78kN into the ground. Force (water pressure) is exerted on the supports as per the following stress diagram:



A square rolled steel section B = 60mm with walls T = 3mm thick would be suitable for use as supports.

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Theorie
und Praxis
für Karrieren
von morgen

fwu
FORSCHUNGSINSTITUT
WASSER UND UMWELT

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Projekt: Prüfbescheinigung Hochwasserschutzsystem WP WASTO

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Datum: 28.04.2005

PRÜFBESCHEINIGUNG WP WASTO

Die Firma Husemann & Hücking hat einen im Wesentlichen aus Stahlprofilen bestehenden Bausatz (WP WASTO) zum Verschließen von Gebäudeöffnungen als Schutz vor Hochwasser entwickelt. Dieses Schutzsystem WP WASTO wurde durch das Forschungsinstitut Wasser und Umwelt (fwu) numerisch, statisch und im Praxistest bei einer Einsatzbreite von b = 2,0 m und einer Stauhöhe bis zu h = 2,0 m überprüft, optimiert und begutachtet. Unter anderem wurde die Belastungsfähigkeit des Systems sowie die Leckwassermenge mit unterschiedlichen Dichtungsmaterialien auf verschiedenen Oberflächenstrukturen ermittelt.

Die Handhabung des Bausatzes wurde anhand dieser Versuche mehrfach und ausdauernd getestet und ebenfalls optimiert.

Wir bestätigen hiermit die Prüfergebnisse, die in der Einbauanleitung des Systemanbieters Husemann & Hücking veröffentlicht sind. Bei Einhaltung der vom Hersteller in der Dokumentation angegebenen Randbedingungen kann das System WP WASTO uneingeschränkt empfohlen werden.

(Prof. Dr.-Ing. J. Jensen)

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MITGLIED 714697

PfB Prüfzentrum für Bauelemente
Dipl.-Ing. (FH) Rüdiger Müller

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KURZBERICHT Nr. 09/03-A068-K1

Prüfung der Hochwasserbeständigkeit nach „RICHTLINIE Hochwasserbeständige Abschlüsse und Bauteile", Ausgabe Januar 2008 - herausgegeben vom **PfB** – an einem Stahlprofil-Steckwandsystem.

Antragsteller	Firma Husemann & Hücking Profile GmbH Am Hofe 9 D-48640 Iserlohn
Bauart	Stahllamellen mit Verstärkungen und Klemmsystem. Wandprofile mit Dichtung wahlweise mit einsteckbaren Stützen in Bodenhülse
Produktbezeichnung	**WP WASTO**
Herstellungsgrößen	Lichter Durchgang: 3000 mm Höhe variabel bis 0,6 m Stützweite 1500 mm Höhe variabel bis 1,2 m
Wasserbeaufschlagung	glatte Profilseite
Klassifizierung	Obige Bauart sowie deren Anbindung sind gemäß Prüfbericht Nr. 09/03-A068-B1 vom 24.06.2009 hochwasserbeständig gegen drückendes oder stehendes (klares) Wasser bei Wasserstand über Bodenniveau bis zu 0,6 m bei lichtem Durchgang von 3,0 m und 1,2 m bei Stützweite von 1,5 m. Die Leckrate kann bis zu ca. 40 l/h je Feld zwischen zwei Führungsschienen betragen. Dieser Kurzbericht enthält nur eine Aussage über die Leistungseigenschaft der Hochwasserbeständigkeit gemäß obiger Richtlinie.
Gültigkeit	Laufzeit der „RICHTLINIE Hochwasserbeständige Abschlüsse und Bauteile" Ausgabe Januar 2008.

Hochwasser

Dipl.-Ing. Matthias Demmel
Stellvertretender Institutsleiter

24.06.2009

Andreas Nerz
Sachbearbeiter

Die Montageanleitung ist Bestandteil von Prüfbericht Nr. 09/03-A068-B1 vom 24.06.2009 und ist jedem gelieferten Bauelement beizulegen.

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